

摘 要

本論文以聚苯乙烯及苯乙烯二乙烯基苯膠體粒子當作理想的膠體膠凝沈降系統，來探討不同粒徑的膠體粒子，以等比例粒子濃度混合後，再加入不同濃度的聚丙烯醯胺（PAM），當作助凝劑來進行沉降實驗，並探討再加入不同濃度的一價電解質氯化鈉（NaCl）時，對其穩定度的影響大小。並且利用蘭謬等溫吸附方程式，找出聚丙烯醯胺在這些膠體表面上的最大飽和吸附濃度。

由實驗結果發現當添加聚丙烯醯胺於膠體溶液中時，其穩定度值會隨所添加 PAM 濃度的增加而降低，而再添加電解質 NaCl 可以幫助並加強膠體溶液的凝集效率，但若加入的是高濃度的 NaCl 電解質，其膠體溶液的穩定度值將不隨添加的 PAM 濃度增加而改變。我們亦由 Langmuir 的等溫吸附實驗知道，添加 NaCl 可以幫助 PAM 吸附量的增加，隨著膠體粒子粒徑的增加，達到最大飽和吸附量所需的 PAM 濃度越少。

ABSTRACT

The main purpose of this thesis is to investigate the effects of polyacrylamide (PAM) and NaCl electrolyte concentration on the stability ratio (the coagulation rate) of the colloidal solution of the polystyrene and styrene divinylbenzene latexes, at equal electrolyte concentration but with different particle sizes. The Langmuir adsorption model is applied to analyze the adsorption behavior of PAM onto those particles.

The stability ratio of colloidal suspension will decrease with the increase of PAM concentration, and decrease much more with the addition of the NaCl solution. From the result of the Langmuir adsorption experiment, we know that the adsorption behavior of PAM onto the particles is increased with addition of NaCl when the particle size is bigger.